

## ABSTRACT

An ECR plasma source of the invention is constructed of: a plasma generating chamber (10) having a generally rectangular section in a plane normal to a plasma flow; magnetic coils (20, 21) wound in generally rectangular shapes in a plane normal to the plasma flow; and a direct introduction type or branching and binding introduction type waveguide (30) or microwave cavity resonator. Microwaves are transmitted into the plasma generating chamber (10) from a plurality of openings (34) which are formed in such side faces in the waveguide (30) or the microwave cavity resonator as correspond to in-phase microwave portions. Moreover, an ECR plasma device comprises the aforementioned ECR plasma source and a sample moving mechanism for moving a large-sized sample.